Sterling

Operating Instructions

Conveyor Hopper
SSK-30

SM3-626

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Edition: 03/99

These operating instructions are for:

(* Please fill in personally)

Serial number: _____

Built in: _____

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Number of delivery: _____

Date of commissioning: _____

Location: _____

Group of machines: _____

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1. Safety instructions

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These safety instructions apply to all persons within the range of action of the equipment.

Please inform all persons within the range of action of the equipment of the direct and indirect hazards connected with the equipment.

These operating instructions are to be used by all persons assigned activities connected with the equipment.

Knowledge of the English language is prerequisite.

Ensure in each case that the operating personnel are familiar with the operating instructions and the function of the equipment.

Observe the safety instructions of the connected conveying system.

1.1. Warnings and symbols

The following warnings and symbols are used in these operating instructions:

This symbol indicates danger to life! Fatal or serious injury is possible if the corresponding instructions, regulations or warnings are not observed.

This symbol indicates that serious injury is possible if the corresponding instructions, regulations or warnings are not observed.

This symbol indicates that extensive damage to equipment is possible if the corresponding instructions, regulations or warnings are not observed.

This symbol indicates information important for becoming familiar with the equipment, i.e. technical correlations.

This symbol indicates that a technical term is explained at this point.

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1.2. Explanations and information

Various terms and designations are used frequently in these operating instructions to ensure clarity. Therefore please note that the terms used in the text stand for the corresponding explanations listed below.

- Equipment
  "Equipment" can mean an individual unit, a machine or an installation.

- Operating personnel
  The "operating personnel" are persons operating the equipment on their own responsibility or according to instructions (minimum age: 16).

- Operator
  The "operator" of the equipment (production manager, foreman, etc.) is the person responsible for all production sequences. The operator instructs the operating personnel of what is to be done.

- Operating instructions
  The "plant operating instructions" describe the interaction of the equipment, production sequences or methods. The plant operating instructions must be compiled by the operator of the equipment.

- Equipment foreman
  When several operating personnel work on one machine, the "equipment foreman" coordinates the sequences. The equipment foreman must be appointed by the operator.

- Trained personnel
  "Trained personnel" are persons who, due to their training, are authorized to carry out the required work in good practice.

1.3. For your safety

- It is absolutely necessary that you observe the operating instructions for the corresponding conveying system.
- The device is intended exclusively for conveying plastic granules and regrind. Any other usage is not permitted.
- This device is not suitable for processing foods.
- Before beginning maintenance work, set all compressed air piping on the device at zero pressure.
  Danger of accidents!
- The device may only be operated if all corresponding components have been properly connected and are in accordance with the relevant regulations.

1.4. For the safety of the equipment

- It is absolutely necessary that you observe the operating instructions for the corresponding conveying system.
- For the operation of the hoppers, a compressed-air supply is necessary.
- Never set the operating pressure of the hoppers at more than 6 bar (87.02 PSI) (system overpressure).
- Install the hoppers in such a way that the outlet flap is hinged in a right angle to the direction of movement of the machine.
- Make sure that all plugs are connected properly.
- Observe the carrying capacity of the machine flange.

2. Installation instructions

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These installation instructions are intended for persons with skills in electrical and mechanical areas due to their training, experience and received instructions.

Personnel using these installation instructions must be instructed in the regulations for the prevention of accidents, the operating conditions and safety regulations and their implementation.

Ensure in each case that the personnel are informed.

The installation instructions provided in the corresponding operating instructions apply for all connected equipment.

Observe safety regulations with regard to lifting gear handling

All installation work must be carried out with the equipment disconnected from electrical power and compressed air supply.

☹

For installation work taking place at heights of over approx. 1829 mm (6 ft.), use only ladders or similar equipment and working platforms intended for this purpose. At greater heights, the proper equipment for protection against falling must be worn.

Use only suitable lifting gear which is in proper working order and load suspension devices with sufficient carrying capacity. Do not stand or work under suspended loads!

Use suitable workshop equipment.

Install the equipment such that all parts are easily accessible; this facilitates maintenance and repair work.

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2.1. Transport

For transport, only the appropriate lifting gear should be used (e.g. fork lift or workshop crane).

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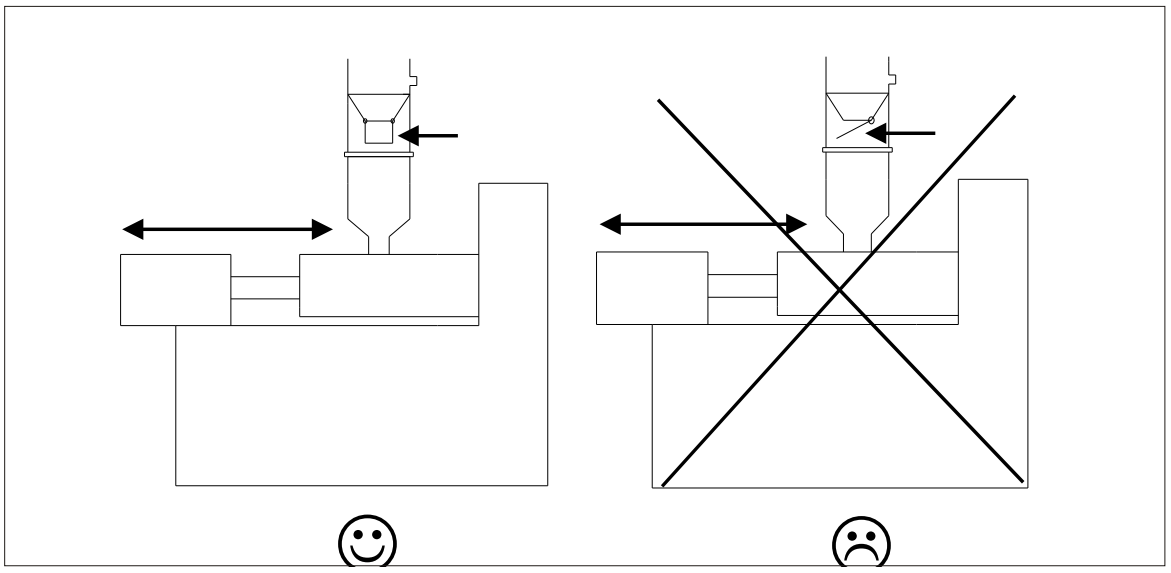
Observe the carrying capacity of the lifting gear.

Observe the safety instructions for the handling of lifting gear.

2.2. Set-up

The arrangement of the hopper loaders may vary depending on the type of device to be conveyed on and the material used. Fastening onto fixed machine throats is provided by means of strap retainers. However, additional support of the hopper loader is necessary if the devices are not sufficiently capable of bearing the load.

Mount the hopper loader in such a way that the outlet flap swings in a right-hand angle to the direction of machine movement. Please check during assembly that the admissible bearing loads are not exceeded.



Assembly

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2.1.

2.2.

Please check that all connecting points are tight to ensure that the conveying performance is not impaired.

It should moreover be observed, particularly if custom produced connecting parts are used, that the material discharged from the hopper loader must neither get into the open nor must it clog the filter surfaces (observe angle of repose!).

Do not excessively load inlet nozzle of hopper loader, remove hose separately, if necessary!

2.3. Compressed-air supply (only with compressed-air valves)

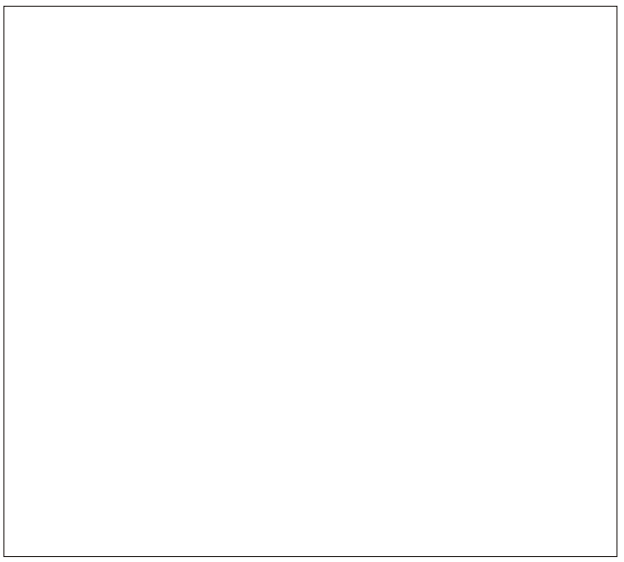
For operating the control valves, a compressed-air supply is necessary.

Check compressed-air piping for correct installation and assembly.

Check fittings, length and quality of the hose connections for agreement with requirements.

The operating pressure is 5-6 bar (72.52-87.02 PSI) (system overpressure).

Check the compressed-air supplied by the plant's supply network.



Maintenance unit

Adjust compressed-air pressure to 5-6 bar (72.52-87.02 PSI) (system overpressure).

Compressed air must be dewatered and oiled.

Install a maintenance unit (pressure reducer with water separator and oiler) if required.

Connect the unit to the plant's supply network by means of a hose.

☹ Depressurize compressed-air supply lines which must be opened.

☞ Compressed air must be dewatered and oiled.

Adjust pressure to a max. value of 6 bar (87.02 PSI) (system overpressure).

2.4. Electrical connection

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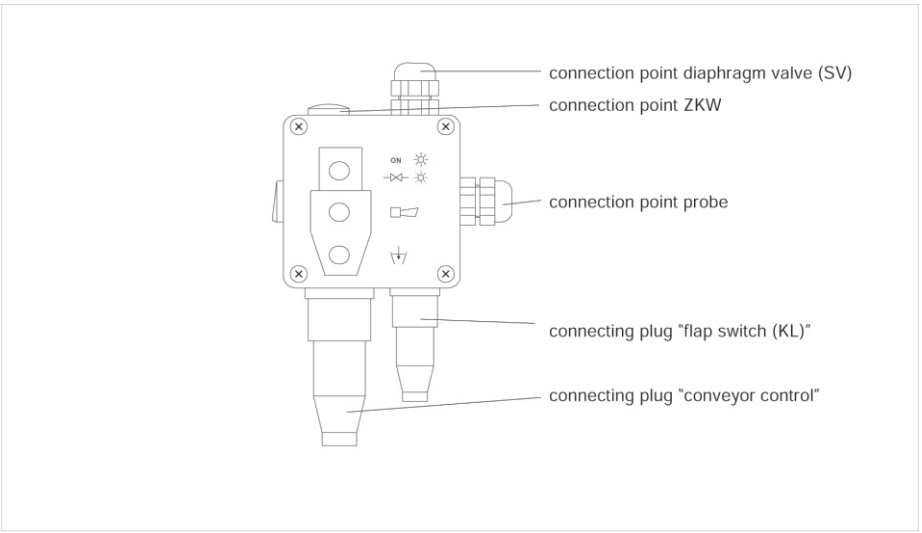
The electrical connection may only be carried out by trained personnel.

Other persons are not permitted to carry out the electrical connection.

The rules of the local electricity board must be observed.

Before beginning the electrical connection, make sure that the mains voltage and the power frequency are in accordance with the data on the name plate of the device.

All work may only be carried out when the unit is at zero voltage and at zero pressure.


connection point diaphragm valve (SV)
connection point ZKW
connection point probe
connecting plug "flap switch (KL)"
connecting plug "conveyor control"

Plug connection connection housing hopper

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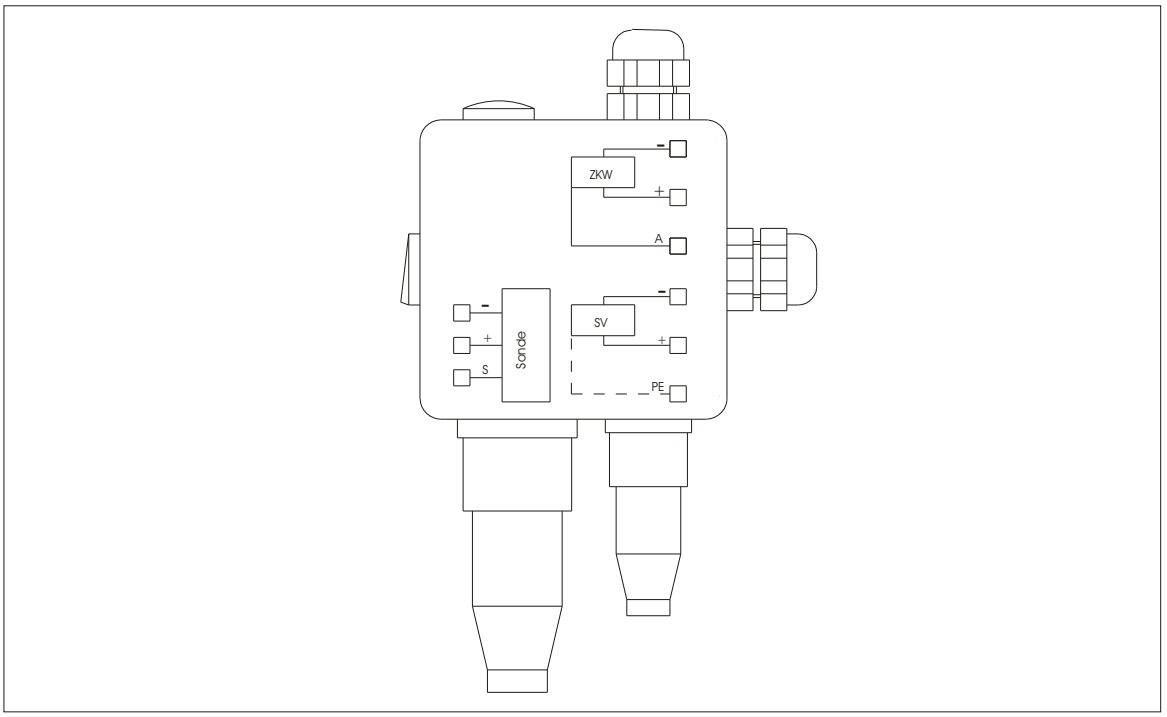
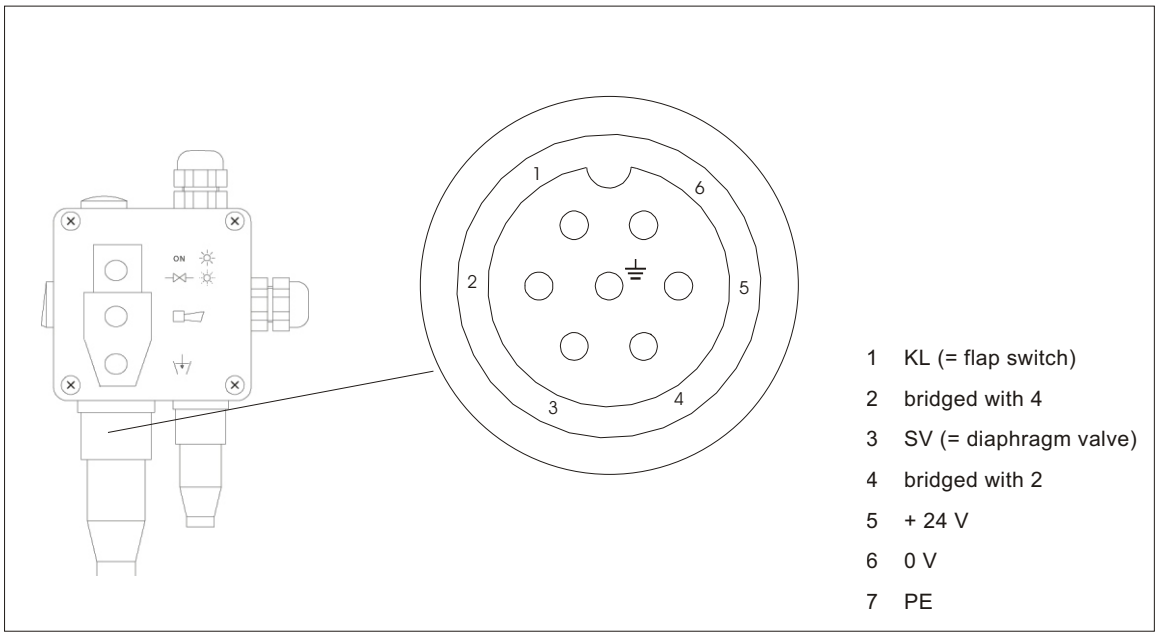


Binders on the card



1 KL (= flap switch)
2 bridged with 4
3 SV (= diaphragm valve)
4 bridged with 2
5 + 24 V
6 0 V
7 PE

Pin connection connecting plug “conveyor control”

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3. Functional description

The conveyor hopper is used for the automatic conveyance of freely flowing plastic granules. The hopper can only function in connection with a vacuum conveyor plant.

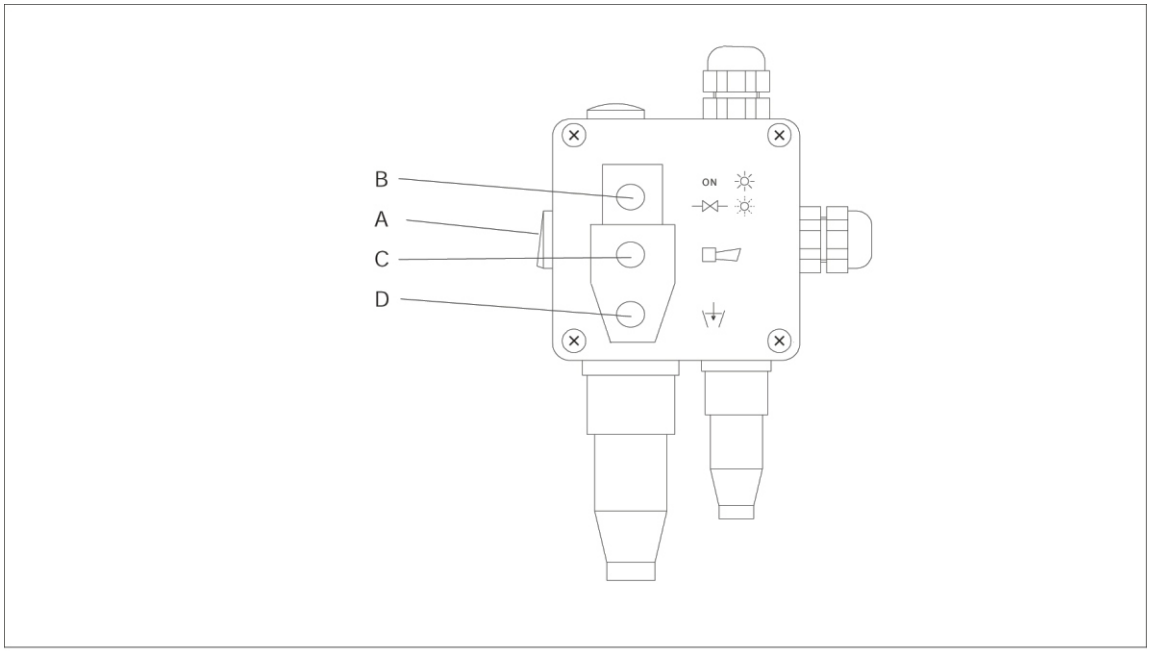
The hopper works without a filter. Depending on the type of valve, the shut-off valve of the vacuum line is operated with compressed air (compressed-air valve) or with the vacuum air (diaphragm valve).

On the hopper, there is a separate on/off switch (A) and a function controlling device which indicates the following operational modes:

(B): lamp on - hopper switched on at the on/off switch (A);
lamp flashes - the hopper is conveying

(C): lamp flashes - error

(D): lamp is on - hopper signals lack of material



Connection housing hopper

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4. Maintenance

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This chapter is intended for persons with skills in electrical and mechanical areas due to their training, experience and received instructions.

Personnel using the instructions in this chapter must be instructed of the regulations for the prevention of accidents, the operating conditions and safety regulations and their implementation.

Ensure in each case that the personnel are informed accordingly.

For maintenance work taking place at heights of over approx. 1829 mm. (6 ft.), use only ladders or similar equipment and working platforms intended for this purpose. At greater heights, the proper equipment for protection against falling must be worn.

Use only suitable lifting gear which is in proper working order and load suspension devices with sufficient carrying capacity. Do not stand or work under suspended loads!

Ensure that the electric motors/switch cabinets are sufficiently protected against moisture.

Use only suitable workshop equipment.

Before starting maintenance work, appoint a supervisor.

Inform the responsible personnel before maintenance work on the system is started.

Never operate the equipment when partially dismantled.

All maintenance and repair work not described in this chapter may only be carried out by Sterling service personnel or authorized personnel (appointed by Sterling).

☹

Disconnect the equipment from mains supply before starting maintenance procedures to ensure that it cannot be switched on unintentionally.

Depressurize all compressed air piping of the equipment before starting maintenance work.

Please observe the maintenance intervals.

Before starting maintenance work, clean the equipment of oil, fuel or lubricants.

Ensure that materials and incidentals required for operation as well as spare parts are disposed of properly and in an environmentally sound manner.

Use only original Sterling spare parts.

Keep record of all maintenance and repair procedures.

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4.1. Maintenance intervals

Daily:	check warning signs on equipment for good legibility and completeness.
	with compressed-air valve: check the oil level in the oiler empty the water separator check the operating pressure in the factory ductwork system (max. 6 bar system overpressure)
every six months:	check all electrical and mechanical connections for proper fit
	check the settings of the level probes (if available)
	check the sealing ring on the locking flap
	check the sealing on the outlet flap
yearly:	replace the sealing ring on the locking flap
	replace the sealing on the outlet flap

The given maintenance intervals are average values.

Check whether in your individual case the maintenance intervals must be shortened.

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4.2. Servicing the hopper loader

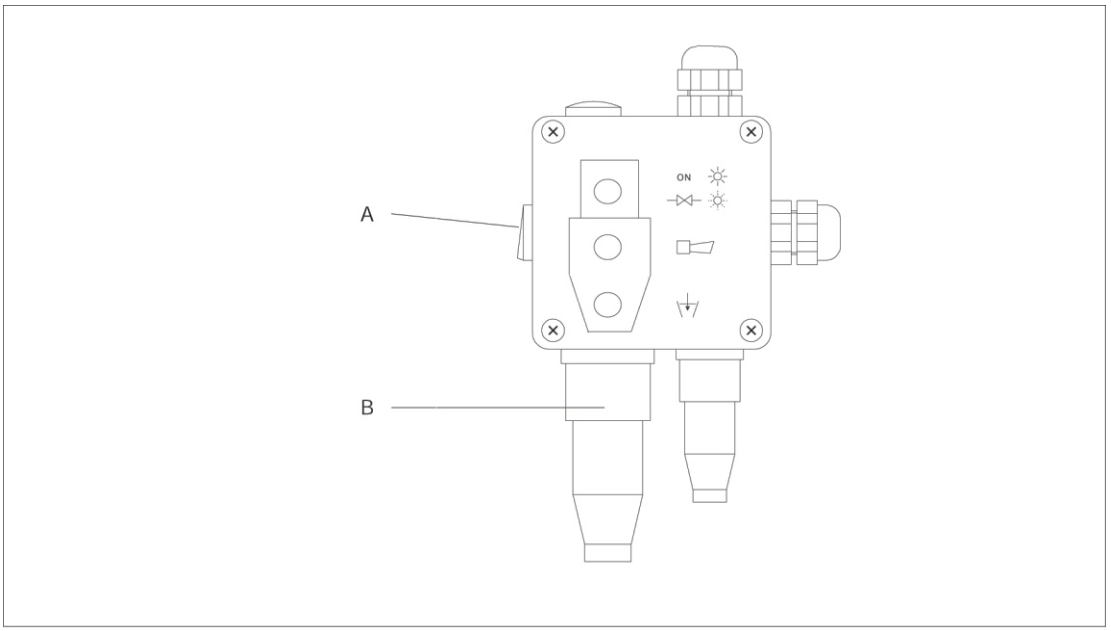
Individual hoppers can also be maintained during operation. However, Sterling recommends that you switch off the conveying plant for all types of work on the hopper.

Switch off the hopper by means of the on/off switch (A) on the connection housing.

Wait until the conveying procedure has stopped.

Disassemble the vacuum line on the hopper.

Close the disassembled vacuum line so that the vacuum for the active hopper-loaders does not break down.



Connection housing hopper

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Depressurise the compressed-air line to the hopper (only with compressed-air valve).

Disassemble the material line on the lateral inlet of the hopper.

Remove the connecting plug (B) “conveyor control” on the connection housing of the hopper.

Disassemble the hopper.

4.2.1. Replacing the nonreturn valve sealing ring

Open the tension ring (A).

Remove the hopper lid.

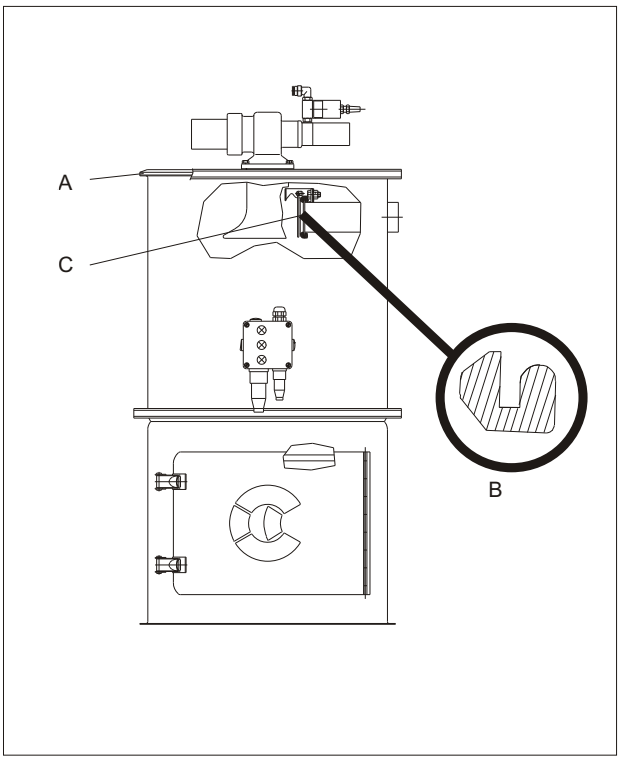
Draw the old sealing ring off the nozzle (B).

Install the new sealing ring. Observe the direction of installation (C).

Mount the hopper lid.

Close the tension ring (A).

Install the hopper loader.



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Part number sealing ring: ID 85610

4.2.2. Replacing the outlet flap sealing

Remove the connecting plug “flap switch” (A) from the connection housing of the hopper.

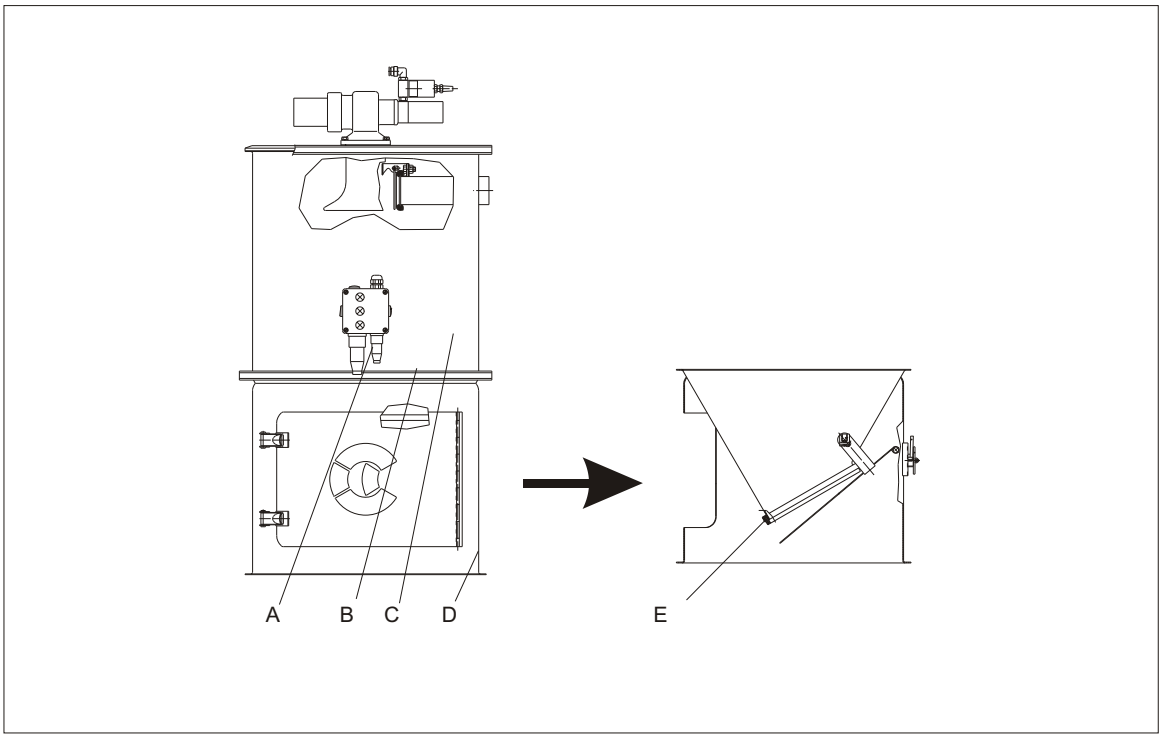
Remove the tension ring (B) and the sealing ring on the hopper loader.

Remove the upper part of the hopper loader (C) from the lower part of the hopper loader (D).

Remove the old outlet flap sealing (E) and the adhesive from the slot. Check that no sticky rests are left behind!

Glue the new outlet flap sealing into the slot. Use a suitable adhesive (e.g. Pattex).

Set the flap switch.



Assembly sealing

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Install the upper part of the hopper loader (C) on the lower part of the hopper loader (D).

Install the sealing ring and the tension ring (B) on the hopper loader.

Connect the connecting plug “flap switch” (A) to the connection housing of the hopper.

Install the hopper loader.

Part number sealing: ID 99880

4.2.3. Adjust the flap switch

Remove the connecting plug “flap switch” from the connection housing of the hopper.

Connect an ohmmeter to PINS 2 and 3 of the connecting plug “flap switch”.

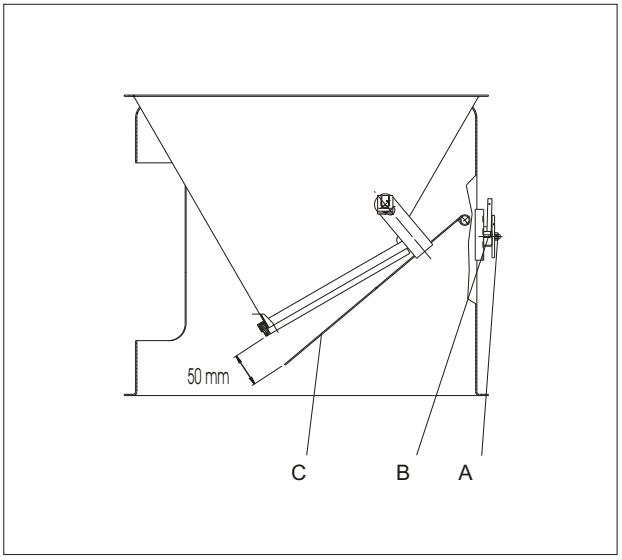
Release the nuts (A) of the flap switch (B) until the support can be displaced.

Open the outlet flap (C) so far that the front tip of the outlet flap is approx. 50 ± 2 mm (1.97 ± 0.18 in.) away from the sealing surface.

Displace the flap switch (B) until the contact of the magnet switch is closed.

Tighten the nuts (A) of the flap switch.

Check the adjustment:
In case of free hanging outlet flap (empty hopper loader) the contact of the magnet switch must be closed.



Outlet flap

If the outlet flap cannot be properly adjusted, replace the flap switch or the outlet flap with magnet.

Install the hopper loader.

Part numbers

flap switch:	ID 33152
outlet flap with magnet:	ID 29699

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4.2.4. Cleaning the hopper loader

Open the tension ring (A).

Remove the hopper loader lid.

Check the sieve (B) within the hopper for material residue. For cleaning, disassemble the hopper: turn the hopper approx. 1/2 rotation counterclockwise.

Clean the sieve by means of compressed-air.

Install the hopper: turn the hopper approx. 1/2 rotation clockwise.

Check the hopper for proper fit.

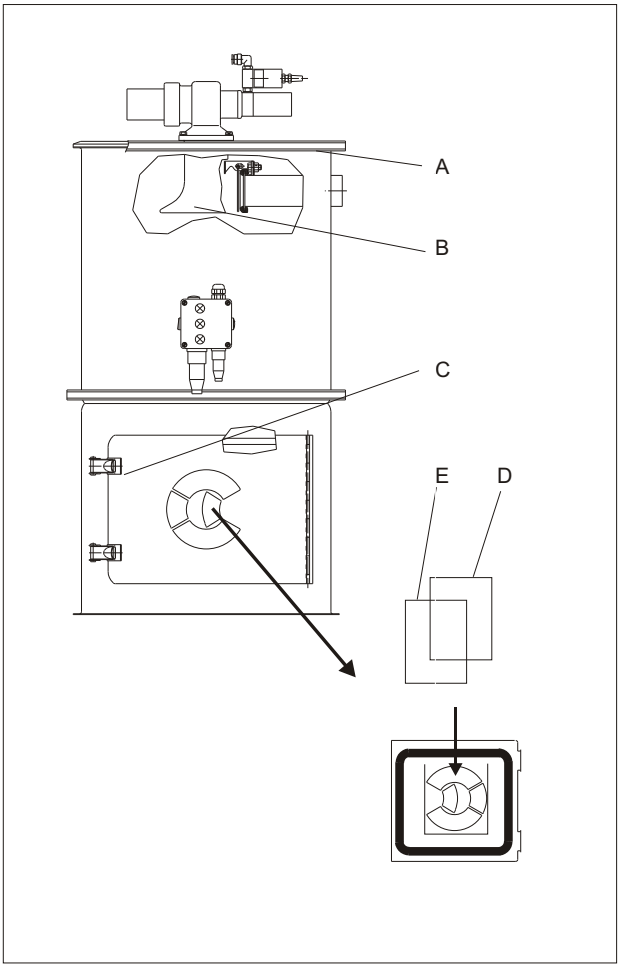
Clean the hopper loader by means of a vacuum cleaner.

Mount the hopper loader lid.

Close the tension ring (A).

Open the toggle-type fasteners (C) on the flap of the hopper loader.

Check the filter (D) and the filter mat (E) in the flap for material residue. Clean the filter by means of compressed air.



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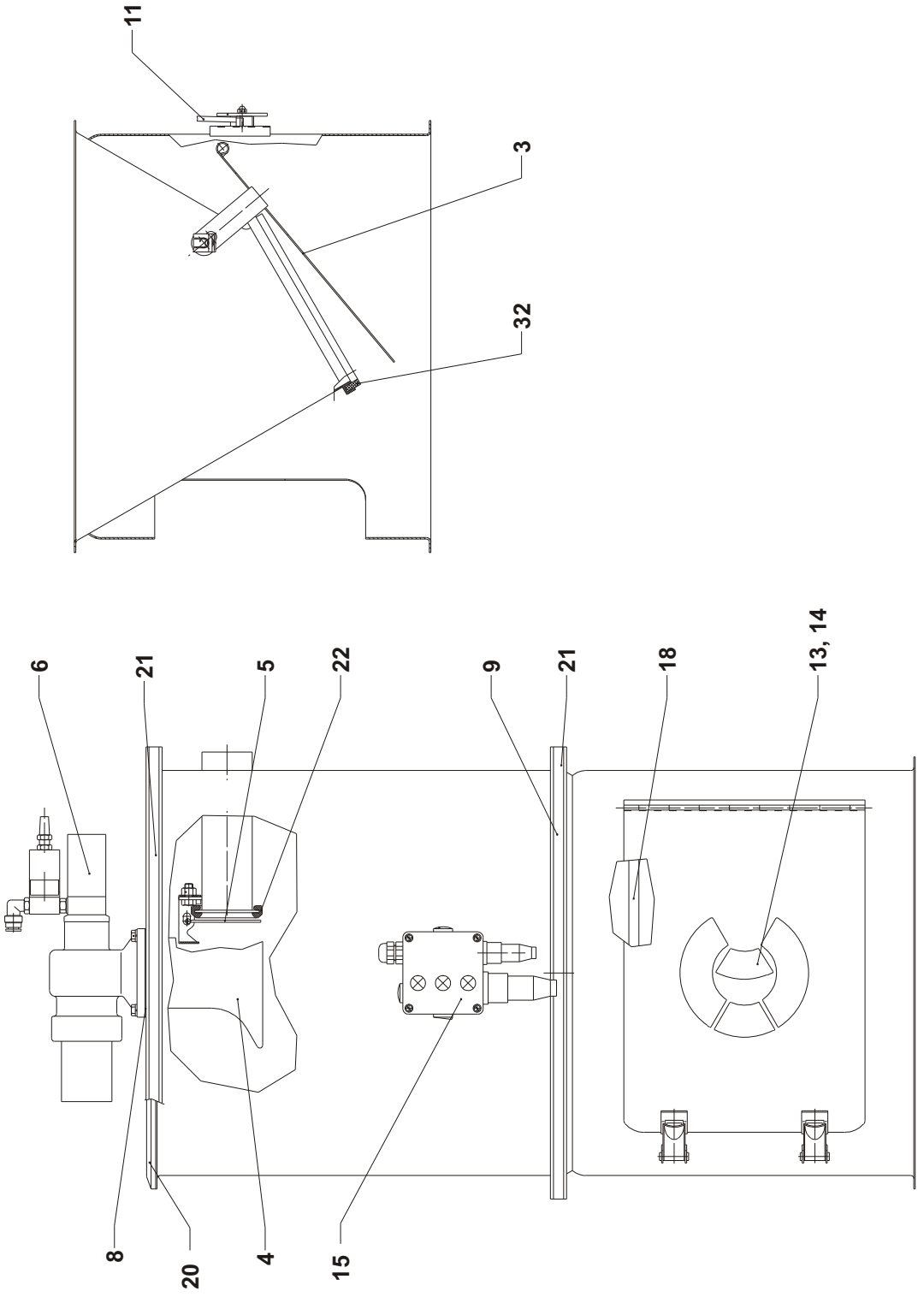
Close the toggle-type fasteners (C) on the flap of the hopper loader.

Install the hopper loader.

5. Spare parts list



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Pos.	Part number	Designation
3	29699	Outlet flap
4	23069	Hopper with sieve
5	26454	Flap
6	26487	Valve
8	23092	Sealing
9	28418	Sealing
11	33152	Flap switch
13	31183	Filter
14	31182	Filter mat
15	84555	Control
18	88635	Sealing
20	95881	Sealing
21	84940	Tension ring
22	85610	Sealing
32	99880	Sealing